

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1           1.       (currently amended) A method for use in recognizing the content of a  
2 media program, said method comprising the steps of:  
3           filtering each first frequency domain representation of blocks of said media  
4 program using a plurality of filters to develop a respective second frequency domain  
5 representation of each of said blocks of said media program, said second frequency  
6 domain representation of each of said blocks having a reduced number of frequency  
7 coefficients with respect to said first frequency domain representation;  
8           grouping frequency coefficients of said second frequency domain representation  
9 of said blocks to form segments; ~~and~~  
10          selecting a plurality of said segments.; and  
11          comparing selected segments to features of stored programs to identify thereby  
12 said media program.

1           2.       (original) The invention as defined in claim 1 wherein each grouping of  
2 frequency coefficients of said second frequency domain to form a segment represents  
3 blocks that are consecutive in time in said media program.

1           3.       (original) The invention as defined in claim 1 wherein said plurality of  
2 filters are arranged in a group that processes a block at a time, the portion of said second  
3 frequency domain representation produced by said group for each block forms a frame,  
4 and wherein at least two frames are grouped to form a segment.

1           4.       (original) The invention as defined in claim 1 wherein said selected  
2 segments correspond to portions of said media program that are not contiguous in time.

1           5.       (original) The invention as defined in claim 1 wherein said plurality of  
2 filters includes at least a set of triangular filters.

1           6.       (original) The invention as defined in claim 1 wherein said plurality of  
2 filters includes at least a set of log-spaced triangular filters.

1           7.       (original) The invention as defined in claim 1 wherein the segments  
2 selected in said selecting step are those that have largest minimum segment energy.

1           8.       (original) The invention as defined in claim 1 wherein the segments  
2 selected in said selecting step are selected in accordance with prescribed constraints such  
3 that said segments are prevented from being too close to each other.

1           9.       (original) The invention as defined in claim 1 wherein the segments  
2 selected in said selecting step are selected for portions of said media program that  
3 correspond in time to prescribed search windows that are separated by gaps.

1           10.      (original) The invention as defined in claim 1 wherein the segments  
2 selected in said selecting step are those that result in the selected segments having a  
3 maximum entropy over the selected segments.

1           11.      (original) The invention as defined in claim 1 further comprising the step  
2 of normalizing said frequency coefficients in said second frequency domain  
3 representation after performing said grouping step, said normalization being performed  
4 on a per-segment basis.

1           12.      (original) The invention as defined in claim 11 wherein said normalization  
2 step includes performing at least a preceding-time normalization.

1           13.      (original) The invention as defined in claim 11 wherein said normalization  
2 is step includes performing at least an L2 normalization.

1           14.   (original) The invention as defined in claim 1 further comprising the step  
2 of storing said selected segments in a database in association with an identifier of said  
3 media program.

1           15.   (original) The invention as defined in claim 14 further comprising the step  
2 of storing in said database information indicating timing of said selected segments.

1           16.   (original) The invention as defined in claim 1 wherein said first frequency  
2 domain representation of blocks of said media program is developed by the steps of:  
3           digitizing an audio representation of said media program to be stored in said  
4 database;

5           dividing the digitized audio representation into blocks of a prescribed number of  
6 samples;

7           smoothing said blocks using a filter; and

8           converting said smoothed blocks into the frequency domain, wherein said  
9 smoothed blocks are represented by frequency coefficients.

1           17.   (original) The invention as defined in claim 16 wherein said filter used in  
2 said smoothing step is a Hamming window filter.

1           18.   (original) The invention as defined in claim 16 wherein each of said  
2 smoothed blocks are converted into the frequency domain in said converting step using a  
3 Fast Fourier Transform (FFT).

1           19.   (original) The invention as defined in claim 16 wherein each of said  
2 smoothed blocks are converted into the frequency domain in said converting step using a  
3 Discrete Cosine Transform (DCT).

1           20.   (cancelled)

1           21.   (original) A method for use in recognizing the content of a media program,  
2   comprising the steps of:  
3           filtering a first frequency domain representation of said media program using a  
4   plurality of filters to develop a second frequency domain representation of said media  
5   program having a reduced number of frequency coefficients in said second frequency  
6   domain representation with respect to said first frequency domain representation;  
7           grouping ones of said second frequency domain representation to form segments;  
8   and  
9           selecting a plurality of said segments.

1           22.   (original) Apparatus for use in recognizing the content of a media program,  
2   comprising:  
3           a plurality of filters for filtering a first representation of said media program using  
4   frequency coefficients to develop a second representation of said media program that has  
5   a reduced number of frequency coefficients with respect to said first representation;  
6           means for grouping ones of said coefficients of said second representation to form  
7   segments; and  
8           means for selecting a plurality of said segments.

1           23.   (original) Apparatus for use in recognizing the content of a media program,  
2   comprising:  
3           means for filtering a first frequency domain representation of said media program  
4   using a plurality of filters to develop a second frequency domain representation of said  
5   media program having a reduced number of frequency coefficients in said second  
6   frequency domain representation with respect to said first frequency domain  
7   representation;  
8           means for grouping ones of said second frequency domain representation to form  
9   segments; and  
10          means for selecting a plurality of said segments.

1           24.   (original) A method for use in recognizing the content of a media program,  
2 said method comprising the steps of:  
3           filtering each first frequency domain representation of blocks of said media  
4 program using a plurality of filters to develop a respective second frequency domain  
5 representation of each of said blocks of said media program, said second frequency  
6 domain representation of each of said blocks having a reduced number of frequency  
7 coefficients with respect to said first frequency domain representation;  
8           grouping frequency coefficients of said second frequency domain representation  
9 of said blocks to form segments; and  
10          searching a database for substantially matching segments, said database having  
11 stored therein segments of media programs and respective corresponding program  
12 identifiers.

1           25.   (original) The invention as defined in claim 24 further comprising the step  
2 of indicating that said media program cannot be identified when substantially matching  
3 segments are not found in said database in said searching step.

1           26.   (original) The invention as defined in claim 24 wherein said data base  
2 includes information indicating timing of segments of each respective media program  
3 identified therein, and wherein a match may be found in said searching step only when  
4 the timing of said segments produced in said grouping step substantially matches the  
5 timing of said segments stored in said database.

1           27.   (original) The invention as defined in claim 24 wherein said matching  
2 between segments is based on the Euclidean distances between segments.

1           28.   (original) The invention as defined in claim 24 further comprising the step  
2 of identifying said media program as being the media program indicated by the identifier  
3 stored in said database having a best matching score when substantially matching  
4 segments are found in said database in said searching step.

1           29.   (original) The invention as defined in claim 28 further comprising the step  
2 of determining a speed differential between said media program and a media program  
3 identified in said identifying step.

1           30.   (original) The invention as defined in claim 28 wherein said matching  
2 score for a program  $P_i$  is determined by  $P_i = \frac{1}{Z} \sum_{j=1}^Z f(S'_{j=1} - S_j(P_i))$ .

1           31.   (original) The invention as defined in claim 28 further comprising the  
2 steps of:  
3           repeating said filtering, grouping, searching and identifying; and  
4           determining, in the event of another match, whether said identified program is the  
5 same program determined prior to said repetition or a different program.

1           32.   (original) The invention as defined in claim 31 wherein said determining  
2 step is based on an overlap score.

1           33.           (original) The invention as defined in claim 32 wherein overlap  
2 score is calculated between said program determined prior to said repetition, P0,  
3 and said program determined during said repetition, P1, is calculated as

4                   Overlap score =  $(t_{\text{end}} - t_{\text{begin}}) / (\text{end time of P1} - \text{beginning time of P1})$

5                   where

6                    $t_{\text{end}}$  is min(end time of P0, P1); and

7                    $t_{\text{begin}}$  is max(beginning time of P0, P1).

1           34.   (original) A method for use in recognizing the content of a media program,  
2 said method comprising the steps of:

3           filtering a first frequency domain representation of said media program using a  
4 plurality of filters to develop a second frequency domain representation of said media  
5 program having a reduced number of frequency coefficients in said second frequency  
6 domain representation with respect to said first frequency domain representation;

7           grouping ones of said second frequency domain representation to form segments;  
8    and  
9           searching a database for substantially matching segments, said database having  
10   stored therein segments of media programs and respective corresponding program  
11   identifiers.

1           35.   (original) Apparatus for use in recognizing the content of a media program,  
2   comprising:  
3           means for filtering a first frequency domain representation of said media program  
4   using a plurality of filters to develop a second frequency domain representation of said  
5   media program having a reduced number of frequency coefficients in said second  
6   frequency domain representation with respect to said first frequency domain  
7   representation;  
8           means for grouping ones of said second frequency domain representation to form  
9   segments; and  
10          means for searching a database for substantially matching segments, said database  
11   having stored therein segments of media programs and respective corresponding program  
12   identifiers.

1           36.   (original) The invention as defined in claim 35 wherein said first  
2   frequency domain representation of said media program comprises a plurality of blocks  
3   of coefficients corresponding to respective time domain sections of said media program  
4   and said second frequency domain representation of said media program comprises a  
5   plurality of blocks of coefficients corresponding to respective time domain sections of  
6   said media program.

1           37.   (currently ammended) A computer readable storage arranged to store  
2   segments derived from, and representative of, various media programs, said segments of  
3   each respective one of said media programs being stored in said database so as to be  
4   associated with a ~~respective~~unique media program identifier;

5        wherein each of said segments is developed by filtering a first frequency domain  
6 representation of said media program using a plurality of filters to develop a second  
7 frequency domain representation of said media program having a reduced number of  
8 frequency coefficients in said second frequency domain representation with respect to  
9 said first frequency domain representation, and grouping ones of said second frequency  
10 domain representation.

1        38        (cancelled)

1        39.        (cancelled)

1        40.        (cancelled)